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Linkages Between Place, Health, and Happiness in Younger and Older Adults

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ABSTRACT

Problem, research strategy, and findings: We examined whether living in a walkable neighborhood influenced the happiness of younger and older city residents. The data for this study came from a comprehensive household population survey of 1,064 adults living in 16 neighborhoods in Dublin City (Ireland) and its suburbs. We used multigroup structural equation modeling to analyze the direct and indirect effects of walkability on happiness, mediated by health, trust, and satisfaction with neighborhood appearance. We found living in a walkable neighborhood was directly linked to the happiness of people aged 36 to 45 ($p = .001$) and, to a lesser extent, those aged 18 to 35 ($p = .07$). For older adults, we found that walkable places mattered for happiness indirectly. Such built environments enhanced the likelihood that residents felt more healthy and more trusting of others, and this in turn affected the happiness of older people living in walkable neighborhoods.

Takeaway for practice: We found that the way neighborhoods are planned and maintained mattered for happiness, health, and trust. Our findings suggest that mixed-use neighborhood designs that enable residents to shop and socialize within walking distance to their homes have direct and indirect effects on happiness. We call for an ongoing dialogue and evaluation of the way our urban and suburban neighborhoods are planned, designed, and developed, so that people can live in walkable places that better enable health and wellbeing.

Keywords: health and wellbeing, life span development, neighborhood design, social connections, trust

Does living in a walkable neighborhood make us happier? In this study we examined whether the design of the places where people resided in Dublin (Ireland) affected their happiness. Scientists and politicians have increasingly argued that, beyond gross domestic product, a nation's welfare is best judged by its ability to make people happy (Layard, 2005; Stiglitz et al., 2009). In this study we built upon previous research indicating that happiness is not just about an individual's personal disposition. Happiness is also affected by one's environmental and social contexts. This implies that happiness can also be affected by decisions affecting the design, planning, and maintenance of the neighborhoods in which we live.

We concur with previous research that calls upon policymakers and the planning professions to focus more on making cities happier and more livable places (Florida et al., 2013; Glaeser, 2011; Montgomery, 2013). It is important, however, that policy and planning

decisions be informed by empirical evidence, including an understanding of the ways in which specific aspects of the built environment are related to happiness across the life span. Informed decision making also requires a cautious approach to analysis, including an effort to control for traditional predictors of happiness when examining the unique effects of the built environment on happiness.

An expansive literature has developed around the predictors of happiness. The traditional literature has focused mainly on individual-level factors. Research has indicated, for example, that higher personal income was positively related to happiness, although there was a diminishing return once incomes reached above median levels in Organization for Economic Cooperation and Development countries (Frank, 2005).[1] Related, being unemployed predicted lower happiness (Kent et al., 2017) and also led to stress and a loss of self-esteem (Helliwell & Putnam, 2005). A person's health

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and social connections also mattered (Layard, 2005). Higher self-assessed health was significantly and consistently positively associated with happiness (Frey & Stutzer, 2002; Leyden et al., 2011; Marks & Shah, 2005), and positive effects of social relationships on happiness were also consistently observed, whether within families, among friends, or among neighbors (Helliwell & Putnam, 2005; Putnam, 2000). Broader feelings of trust in the community were also central to the concept of social capital, defined as the degree to which people feel connected and supported within their community. Individuals who reported higher levels of social capital have been found to report higher levels of wellbeing (Kent et al., 2017; Putnam, 2000).

In the current study, we examined the degree to which variables related to the built environment contributed to the happiness of city residents. Our key independent variable related to the built environment was neighborhood walkability, which is a measure of how easily residents can attain their daily needs by walking to key functional destinations from their home. This included being able to walk to local shops, grocery stores, pharmacies, cafes, parks, public transport stops, local schools, and more: a total of 16 destinations. This measure of walkability is of particular interest to land use and transportation planners because it taps into what makes a neighborhood a place where residents can live without the significant use of a car yet still walk to attain their daily needs and connect socially. Such places often have a unique, village-like sense of place (Talen & Koschinsky, 2013).

We propose here that walkability was an important predictor of happiness for city residents, and we put this hypothesis to the test by examining the effects of walkability over and above the effects of other traditional predictors of happiness and other aspects of the city environment.

We begin by providing an overview of the existing literature and highlighting our specific research contribution. We also describe our life span developmental perspective and the details of our structural model, which analyzed the effects of walkability on happiness in younger and older adults. Next, our methods section describes the study site in Dublin, the data collection process, and the specific measures used in the current study. This is followed by a section describing limitations of the current research. The next section details the study results, including a detailed account of the effects of walkability and other control variables on happiness across four groups of adults, aged 18–35, 36–45, 46–60, and 60+ years. We found that the effect of walkability on happiness differed when we compared younger and older adults. In general, the walkability of the place one lives had a direct effect on happiness for younger people, especially those who are in the 36 to

45 years age range. However, the effect of walkability on the happiness of adults aged 45 years and older was indirect and mediated by the positive effects of walkability on health, trust in others, and levels of satisfaction with the appearance of their neighborhoods. The final section provides a discussion of our findings along with a conclusion highlighting the importance for an ongoing dialogue exploring new ways of planning walkable places that support happier, more connected communities that enhance population health and wellbeing.

The Existing Literature

A number of prior studies have suggested that various aspects of the built environment matter for wellbeing or happiness. Where these studies tend to disagree is on what aspects of the built environment matter most.

Leyden and colleagues (2011) found that holding traditional predictors of happiness constant, aspects of the built environment—including access to cultural amenities, good public transportation, and whether residents felt their city was beautiful—were positively related to happiness in 10 international cities. Xiong and Zhang (2016) found that young adults living in Japan reported higher life satisfaction and happiness if they lived in a metropolitan area as opposed to a nonmetropolitan area. According to Xiong and Zhang (2016), younger adults felt cities offered more employment opportunities, more housing choice, and residential environments "with good walkability," access to viable public transportation, and more opportunities to be social and to participate "in leisure activities, learning activities, and community activities" (p. 46). Other studies have reported similar linkages between aspects of the built environment and wellbeing (Cao, 2016; Dong & Qin, 2017; Jaśkiewicz & Besta, 2014; Liu et al., 2017; Wang & Wang, 2016).

The works of Ettema and Schekkerman (2016), Kent et al. (2017), Hart et al. (2018), and Pfeiffer et al. (2020) are particularly relevant and insightful for the purposes of the current study. Each study examined effects of the built environment on happiness and/or life satisfaction while also statistically controlling for the influence of other traditional predictors of wellbeing. All of these studies suggested that aspects of the built environment mattered for wellbeing, but the pathways and relationships were not always consistent. Ettema and Schekkerman (2016), using data from the Netherlands, found that two subjective perceptions of the built environment—perceived attractiveness and perceived safety of neighborhoods—were related to life satisfaction. Using data collected in Sydney (Australia), Kent et al. (2017) found that living in a more walkable neighborhood—measured both objectively and subjectively—

was positively related to respondents' self-reported life satisfaction. However, only subjective measures of neighborhood walkability, not objective measures, were significantly positively related to happiness. Higher subjective ratings of neighborhood attractiveness (i.e., how aesthetically pleasing the neighborhood was) were also significantly positively related to both life satisfaction and happiness. At the same time, objectively measured access to green space did not predict either happiness or life satisfaction.

A comprehensive study by Hart et al. (2018) examined how objective and subjective physical and social neighborhood characteristics affected happiness in cities and suburbs in five European countries. They examined relationships between 14 independent variables and happiness in a series of statistical models that included other variables as moderators (e.g., age, children in the household, education, employment status). Across these separate models, a range of effects were observed, including higher happiness levels for people living in neighborhoods that were cleaner, safer, more aesthetically pleasing, and with more water and green spaces and places with more social contacts where neighbors were trusted. Surprisingly, they also found negative associations between the perceived number of destinations and happiness. Similar to Kent et al. (2017), Pfeiffer et al. (2020) examined the effects on life satisfaction of both objective and subjective measures of neighborhood walkability and access to public transport and parks, while controlling for traditional predictors of wellbeing. Pfeiffer et al. found that perceived (but not objective) neighborhood park access was related to greater life satisfaction, whereas objectively measured (but not perceived) neighborhood walkability was related to life satisfaction.

In summary, research across different countries has suggested that aspects of the built environment—such as walkability, access to quality parks, and neighborhoods that are aesthetically pleasing, socially connected, and safe—influenced self-reported wellbeing of residents. At the same time, questions remain as to the relative influence on happiness of different subjective perceptions or objective measures of the city environment, how well these effects replicate across different cities, how robust effects are when other predictors of happiness are statistically controlled for, and whether these effects vary across different groups in the larger population of city residents.

The Importance of Age, Place, and Happiness

Life span developmental science includes a focus on how the city environment can affect wellbeing across the adult life span. Although ecological models of aging

emerged in the formative years of life span science (Lawton & Nahemow, 1973) and argued, for example, that the physical (or built) environment may influence the wellbeing of older adults, empirical analysis of these relationships was largely ignored by researchers for decades (Wahl et al., 2012). More recent work has indicated that older adults value places that facilitate autonomy, mobility, emotional attachment, social participation, and a sense of belonging (Plouffe & Kalache, 2010; Rosso et al., 2011; Taylor, 2001; Wahl et al., 2012). When it comes to the design of neighborhoods for older adults, this entails consideration of the walkability of neighborhoods, access to transportation, access to amenities that facilitate physical activity, and social and cultural engagement (Lui et al., 2009).

From a life span developmental science perspective, comparing the effects of walkability on groups of younger and older adults living in the same city is valuable. Do aspects of the built environment affect the happiness of older adults, as hypothesized in early ecological models of aging? To what degree does the built environment affect the happiness of younger adults? Richard Florida (2017), for example, has long proposed that cities must compete to attract younger, highly educated, and creative people, in part through promoting vibrant walkable neighborhoods with good public transportation and easy access to cafes, green spaces, sports and cultural amenities, and nightlife. Notably, very few studies have addressed the differential effects of the built environment on younger and older adults.

One line of empirical work by Leyden and colleagues on the relationship between the city environment and the happiness of residents highlighted a distinction between the role of place and performance variables (Goldberg et al., 2012; Leyden et al., 2011). Place variables included residents' ratings of how beautiful their city was, how proud they were to live there, and how easy it was to access shops, cultural and sports amenities, green spaces, and public transportation. Performance variables included residents' ratings of the city's basic services such as good schools, the quality of health care facilities, safety from crime (from good policing), and facilities serving the disadvantaged. Findings indicated that, even after controlling for traditional predictors of happiness such as self-rated health status and social relations, both place and performance variables predicted residents' happiness. Interestingly, in a study of younger and older adults living in Berlin (Germany), London (United Kingdom), New York (NY), Paris (France), and Toronto (Canada), Hogan and colleagues (2016) found that the happiness of younger city residents was strongly predicted by place variables, whereas for older residents performance variables were more important for happiness.

The walkability of neighborhoods may have both a performance aspect (i.e., walkability supports access to needed services such as doctors' offices) and a place aspect (i.e., walkability supports access to cultural places, shopping, and cafes). From this perspective, we predicted strong effects of walkability on happiness, consistent with previous research. At the same time, the effects of walkability on happiness may also be different for younger and older adults. As noted above, research has suggested that autonomy and a sense of belonging, and an environment that supports these, may be critical for the wellbeing of older adults. Living in a walkable neighborhood may support these feelings and affect happiness in older adults. Also, assuming feelings of autonomy and belonging become increasingly important for older adults, the effects of walkability on happiness may become increasingly mediated by other variables related to autonomy and belonging. For example, living in a walkable neighborhood may enhance feelings of trust because such places allow one to move freely and connect socially with others at local destinations such as coffee shops or parks. These feelings of trust may then predict higher levels of happiness. Also, given the importance of physical and cognitive activity and engagement for maintaining health and wellbeing as we grow older (Hogan, 2005; Staff et al., 2018), the effects of walkability on happiness may be increasingly mediated by health and the extent to which walkability prompts satisfaction within one's neighborhood. Conversely, the effects of walkability on the happiness of younger adults may be more direct in the sense that walkability is important for everyday life—including work activities, access to local cultural and shopping amenities, access to transportation links, and social engagement—but less strongly mediated by satisfaction with neighborhood appearance, feelings of trust in others, or the effects of walkability on health.

The Current Study

We sought to replicate and build upon existing research and examine the effects of both the built and social environments on the happiness of younger and older adults. We added a new city and country as a focus of inquiry: Dublin (Ireland). We introduced a life span and developmental perspective and focused specifically on the effects of walkability on the happiness of younger and older adults. While focusing on walkability, we also controlled for the effects of other aspects of the city environment (e.g., access to neighborhood sites such as green spaces and perceived attractiveness of neighborhoods), along with feelings of trust and perceptions of crime. Controlling the effects of other potential predictors of happiness was important. For example, previous studies reporting that green spaces affect

happiness did not always control for neighborhood social connections or feelings of trust in others. When positive effects of green spaces on happiness were reported in these studies, researchers naturally question whether it was the green spaces affecting happiness or whether it was the social connections and feelings of trust occurring in green spaces that matter (Maas et al., 2009). It is also important to control for the perception of crime; walkable areas with high crime can depress everything from the likelihood of walking to feelings of trust in others. Mouratidis (2019), for example, found that people living in compact and potentially more walkable neighborhoods reported higher life satisfaction but only after statistically controlling for perceived neighborhood safety, noise, and cleanliness. In other words, some walkable neighborhoods enable social interactions and walking because crime is perceived to be low and they are more pleasant to be in.

We hypothesized that living in a walkable neighborhood had direct effects on happiness as well as effects that are mediated by perceptions of the social environment (i.e., feelings of trust in others), health, and satisfaction with the appearance of local neighborhoods. We also hypothesized that these mediational effects would be stronger among older adults when compared with younger adults. We used multigroup structural equation modeling to examine differences in the effects of neighborhood walkability on happiness across four age groups. Our conceptual and structural model in the current study is presented in Figure 1.

Method

The data for this study are from a comprehensive household population survey of 1,064 adults living in Dublin City and its suburbs (Fitzsimons D'Arcy, 2013). The survey was conducted from July to September 2011. Residents from 16 neighborhoods were selected, and adults living in households within these neighborhoods were surveyed. The 16 neighborhoods were identified as being either high or low in terms of walkability based upon an approach that used focus group and criterion-based ratings of neighborhoods, existing census and city-level data analysis, and further neighborhood walk-through evaluations by experts (see the Technical Appendix).

Neighborhood Selection

Neighborhood selection began with the input of 26 professionals who participated in five focus groups. Focus group participants included professionals working in transport planning and engineering, spatial planning, health, urban design, architecture, and geography, as well as public representatives from the Dublin area.
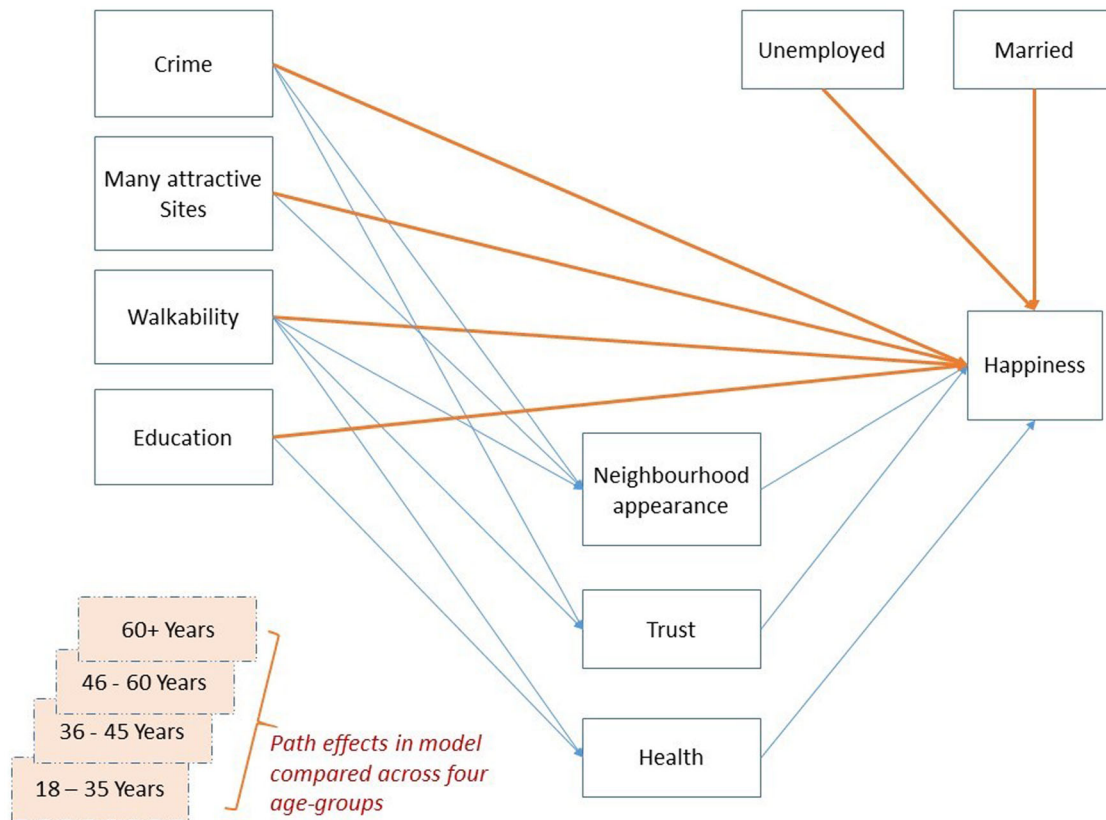
Figure 1. Structural model tested simultaneously across four age groups, describing direct and indirect effects of walkability and other control variables on happiness. Direct effects are indicated using thick lines and indirect, mediated pathways are indicated using thin lines.

Using city maps, focus group participants first identified and discussed areas of Dublin City and its suburbs that were high and low walkable areas.

Using a list of 20 high and low walkable neighborhoods selected by focus group participants, the study team sought to identify a balance of economically deprived and non-deprived neighborhoods for inclusion in the survey. Each neighhorhood was therefore evaluated using a national deprivation index available at the census small area–level scale (see the Technical Appendix). A shortlist of neighborhoods high and low in walkability and either deprived or not deprived was then reviewed by a cross-disciplinary team of experts who were provided with available data on each neighborhood (including available online mapping data, deprivation data, and available geographical information system and census data). Members of the team also visited each neighborhood in person. The expert team was asked to evaluate the neighborhoods using 14 criteria that included aspect of walkability and pedestrian character (see the Technical Appendix). Sixteen neighborhoods scoring high and low in both walkability and deprivation were then selected for inclusion in the survey.

Validation of Expert Rated Walkability

Table 1 highlights some key differences between neighborhoods rated by experts as high versus low in walkability. Notably, our survey included a range of questions that asked respondents to assess many aspects of their neighborhood.

Examining mean differences in these ratings (using independent sample *t* tests), survey respondents living in low walkable neighborhoods tended to report public transportation as difficult to use in their neighborhoods; they also reported owning more cars and spending more on gasoline/fuel for their cars. Conversely, people living in high walkable neighborhoods reported finding that there were "many different routes for walking from place to place" and more pedestrian-friendly crosswalks. Residents of the two neighborhood types also reported living in built environments that were distinctly different in other ways. Residents living in low walkable places reported that they were more likely to live in places with large parking lots in front of shops and businesses, whereas residents of highly walkable neighborhoods reported living in places with a lot of "inviting local shops" that had "a village feel to it" and that had lots of people "shopping or visiting restaurants and pubs

Table 1. Mean differences between high and low walkable neighborhoods for a range of resident outcomes and perceptions.

		Mean	SD	t	p (Two-tailed)
Difficult to use public transportation	Low walkable	2.36	1.18	14.52	.000
	High walkable	1.47	0.77		
Number of cars available to use in household	Low walkable	1.40	0.89	4.45	.000
	High walkable	1.15	0.84		
Household weekly fuel spend	Low walkable	43.51	36.71	6.18	.000
	High walkable	29.36	32.55		
Many different routes for walking from place to place in neighborhood	Low walkable	3.31	1.25	−10.81	.000
	High walkable	4.05	0.98		
Sufficiently wide, good-quality footpaths	Low walkable	3.81	1.17	1.40	.161
	High walkable	3.71	1.19		
Pedestrian crossings/pedestrian lights to help walkers	Low walkable	3.35	1.30	−4.36	.000
	High walkable	3.68	1.20		
Large car parks in front of shops and businesses	Low walkable	3.35	1.22	16.06	.000
	High walkable	2.17	1.16		
Many inviting, locally owned shops	Low walkable	2.99	1.22	−9.07	.000
	High walkable	3.67	1.21		
People about all day and in the evening shopping or visiting	Low walkable	2.89	1.33	−10.17	.000
	High walkable	3.71	1.27		
Is a unique area with personality and character	Low walkable	3.02	1.19	−14.92	.000
	High walkable	4.08	1.10		
My local neighborhood has a village feel to it	Low walkable	2.62	1.35	−12.42	.000
	High walkable	3.67	1.39		
Walkability (number of destinations)	Low walkable	12.14	3.47	−16.50	.000
	High walkable	15.18	1.64		

Note: Responses for *Difficult to use public transportation* ranged from 1 = *very easy* to 5 = *very difficult*; *No. cars available in household* ranged from 0 to 4 or more; *Household fuel spend* used an opened-ended/fill-in-the-blank response; *Walkability* listed 16 destinations (see Table 2); responses to all other questions above ranged from 1 = *strongly disagree* to 5 = *strongly agree*.

nearby." Likewise, those living in highly walkable areas tended to perceive the places they lived as being more "unique with personality and character." Pictures of examples of high and low walkable neighborhoods from Dublin and its suburbs are included in our Technical Appendix and in Figure 2. As suggested by these pictures and the findings in Table 1, residents living in highly walkable, mixed-use neighborhoods perceived their built environments to be fundamentally different from those living in more car-oriented places with low levels of walkability.

Analyzing the Effects of Perceived Walkability of Neighborhoods on Happiness
In the next phase of analysis, we examined the direct and indirect effects of walkability on happiness ratings of individual city residents while controlling for a range of other factors known to influence happiness

(Figure 1). The variables included in the structural model are presented in Table 2.

Two key variables are worthy of discussion at this point. The dependent variable in the current study was a measure of happiness. A common way of measuring happiness (or wellbeing) is to ask survey respondents to self-report their levels of happiness, often using a single question, as we have done in our study (Kalmijn & Veenhoven, 2005; Weimann et al., 2015). These single-item measures tend to use variations on the following types of statements: "All in all, how satisfied are you with your life at the moment?" (Weimann et al., 2015, p. 89) or "Taking all together, how satisfied or dissatisfied are you currently with your life as a whole?" (Kalmijn & Veenhoven, 2005, p. 359). The question we used—"All things considered, how happy are you right now?"—drew on this established approach.[2]

The key independent variable was a measure of perceived walkability of neighborhoods, which has

Figure 2. Examples of high walkable and low walkable neighborhoods. (a) High walkable neighborhood (photo credit: Sarah Rock, TU Dublin; see Rock et al., 2021); (b) Low walkable neighborhood (photo credit: Lorraine D'Arcy, TU Dublin).

Table 2. Predictors of happiness.		
Variable	**Item(s)**	**Response options**
Happiness (dependent variable)	"All things considered, how happy are you right now?"	Range from 1 = *not at all happy* to 5 = *very happy*
Neighborhood walkability	The number of destinations a respondent reported being able to walk to without too much trouble.	A total of 16 possible destinations available for selection (e.g., coffee shop, a church or place of worship, a park, etc.)
Health	"In general, would you say that your health is … ?"	Range from 1 = *poor* to 5 = *excellent*
Crime	"How satisfied are you with feeling safe from crime in your neighborhood?"	Range from 1 = *very dissatisfied* to 5 = *very satisfied*
Trust	"Would you say that most of the time people try to be helpful or that they are mostly just looking out for themselves?"	0 = *try to be helpful* and 1 = *looking out for themselves*
Attractive sights in neighborhood	"In your neighborhood, are there many attractive sights such as gardens, trees, green spaces, attractive buildings, and views?"	Range from 1 = *strongly disagree* to 5 = *strongly agree*
Satisfaction with neighborhood appearance	"How satisfied are you with the appearance of your neighborhood?"	Range from 1 = *very dissatisfied* to 5 = *very satisfied*
Employment	What is your current job status?	0 = no, 1 = yes (based upon seven categories)
Education	What is your highest level of education completed to date?	1= *some primary or no schooling* to 5 = *postgraduate degree (MA/PhD or similar)*
Married (or living with a partner)?	Are you?	0 = no, 1 = yes

been used in previous studies (e.g., see Kwon et al., 2019; Leyden, 2003; Rogers et al., 2011; Rohrer et al., 2004). Its reliability was thoroughly examined by Bias et al. (2010), who compared it with other established items. The measure's reliability was assessed again for this study.[3] The walkability measure asked respondents to indicate the number of local destinations they could walk to without too much trouble, using a specified list of destinations. It was therefore a subjective measure and one that did not measure multiple aspects of walkability such as the ability to walk comfortably for recreation. Importantly, the measure tapped into our operational definition of a walkable neighborhood that

enabled residents to walk to local destinations such as parks, shops, community centers, grocery stores, schools, and cafes, among other places. As suggested from the analysis in Table 1, residents living in highly walkable neighborhoods in Dublin were far more likely to perceive their communities as having a unique village feeling with "many inviting, locally owned shops" and less likely to report living in a built environment where they felt they needed to own and use a car.

The Technical Appendix provides additional information on the source of all variables used in this study as well as the reliability of each measure.

Table 3. Descriptive statistics.

Indicator	18–35 Years		36–45 Years		46–60 Years		60+ Years	
	M	SD	M	SD	M	SD	M	SD
Happiness	4.01	0.91	3.90	0.92	4.00	0.95	4.18	0.88
Health	3.78	0.89	3.64	0.91	3.48	1.07	3.20	0.88
Education	5.42	1.29	5.42	1.46	4.69	1.54	4.13	1.86
Feelings of safety from crime	3.55	1.18	3.36	1.18	3.57	1.18	3.59	1.16
Trust	1.30	0.46	1.25	0.435	1.22	0.41	1.14	0.35
Walkability of neighborhood	13.40	3.10	13.25	3.16	14.41	2.42	14.18	3.52
Satisfaction with neighborhood appearance	3.45	1.25	3.47	1.24	3.70	1.15	3.77	1.13
Many attractive sights in neighborhood	3.16	1.29	3.10	1.38	3.52	1.45	3.46	1.42

Notes: Means and standard deviations for the four age groups across measures included in the study. See Table 2 for variable descriptions and response scales.

Limitations

Our research has several limitations. Our data are from Dublin, which limits generalizability to other countries. We only used subjective measures in this study and thus, unlike some prior studies in the area (e.g., Kent et al., 2017; Pfeiffer et al., 2020), we were not examining the effects of both objective and subjective predictors of happiness. Our measure of walkability was a subjective measure of how many destinations a respondent felt they could walk to in their neighborhood without too much difficulty. Although our measure of perceived walkability concurred with expert categorizations of walkability in this study (see Table 1), the use of subjective measures of the built environment—in general—could appear concerning because planners do not plan perceived communities; they plan *real* ones. It is important to note, however, that perceptions of reality often influence attitudes and key aspects of behavior, and this has been found to be true in many social science disciplines. For example, political scientists have found that it is not just the objective performance of the economy that matters to voters but voters' subjective perceptions of economic performance (Lewis-Beck, 1988; Lewis-Beck & Costa Lobo, 2017). Likewise, crime rates can be lower objectively, yet the public can perceive them to be higher under certain conditions, and these perceptions can influence their behavior (Hipp, 2013). We recognize that translating perceptions people have about their neighborhoods into real-world planning practices is not straightforward. Planning professionals, however, may need to investigate further the relationship between objective measures of the built environment and how residents perceive them, factors that moderate the relationship between objective and subjective measures, and ways in which both objective and subjective measures of the built environment affect the happiness of residents. A key challenge is translating subjective perceptions and preferences into real-world urban planning initiatives, which may subsequently enhance both the perceptions of walkability and the lived experience of people residing in neighborhoods.

Finally, our data are from 2011. This is older than we would have preferred, but we had no reason to suspect this undermined our core findings in relation to the importance of neighborhood walkability.[4] Caution is also warranted given the correlational nature of the findings reported here; although our central hypothesis was that walkability influences happiness, the correlational nature of our findings did not allow us to infer causal relationships.

Results

Comparing Younger and Older Adults Across All Study Variables

Means and standard deviations for all variables in the model across the four adult groups are presented in Table 3. Prior to running our structural equation models, we examined these variables using one-way analysis of variance, correcting for multiple comparisons (i.e., $p < .0125$). Mean level differences (not shown) were found for a number of variables across age groups. For example, although there were no differences across age groups in self-reported happiness, self-reported health scores were significantly lower for the groups aged 46–60 years and 60+ years when compared with adults aged 18–35 years ($p < .01$), and adults aged 60+ years also reported lower health when compared with adults aged 36–45 years ($p < .01$).

In relation to trust, in comparison with adults aged 18–35 years, adults aged 60+ were more likely to report that other people try to be helpful in general. However, there were no age group differences in feelings of safety from crime. Adults aged 46–60 years reported that their neighborhoods were more walkable when compared with adults aged 18–35 and 36–45 years ($p < .01$). Also, when compared with adults aged 18–35

and 36–45 years, there was a trend for adults aged 46–60 years to report that there were more attractive sites to visit in their area ($p < .05$). However, there was no difference across age groups in levels of satisfaction with the appearance of the neighborhoods in which they lived. Finally, as expected given rising levels of third-level education in Ireland in recent decades (Malone, 2019), levels of education were higher in adults aged 18–35 and 36–45 years when compared with adults aged 46–60 years and 60+ years ($p < .01$).

The Effects of Walkability on Happiness

The multigroup model in Figure 1, where all structural relations other than the direct and indirect effects of walkability were constrained to be invariant across age groups, provided a good fit to the data (see the Technical Appendix).

The effects of walkability on happiness differed across the four age groups in a number of ways. For adults aged 18–35 years, the effects of walkability were limited. The direct effect of walkability on happiness for this age group, although positive, was statistically significant only at the $p = .07$ level, and there was no effect of walkability on health or trust in others. However, higher levels of walkability did predict greater satisfaction with neighborhood appearance, which in turn predicted higher happiness.

For adults aged 36–45 years, higher levels of walkability were directly positively related to higher levels of happiness ($p = .001$). The total effect of neighborhood walkability on happiness in this group was 0.077. Walkability was measured on a 17-point scale (0–16); therefore, a person with a maximum score on the measure of walkability could be expected to have, on average, a 1.3-point higher score on happiness compared with a person with a minimum score on walkability; that is, a 26% increase in their overall rating of happiness as measured on the 5-point scale used in the current study.[5]

For adults aged 46–60 years, there was no direct effect of walkability on happiness. Instead, and as hypothesized, the effects of walkability on happiness were mediated by health and trust in others. In particular, higher levels of neighborhood walkability were positively associated with health and trust, and higher levels of health and trust in turn predicted higher happiness in this age group. Finally, for adults aged 60+ years the effects of walkability on happiness were strongly mediated by the positive effects of walkability on health ($p = .001$) and also by weaker effects of walkability on satisfaction with neighborhood appearance ($p = .056$), both of which had strong positive effects on happiness.

Table 4. Common and unique path effects across four age groups.				
	Estimate	SE	Est./SE	p Value
Common effects for all four age groups				
Happiness ← Health	0.165	0.035	4.711	.000
Happiness ← Education	0.008	0.022	0.385	.700
Happiness ← Married	0.120	0.061	1.980	.048
Happiness ← Unemployed	−0.250	0.126	−1.983	.047
Happiness ← Crime	0.015	0.006	2.604	.009
Happiness ← Trust	−0.429	0.080	−5.385	.000
Happiness ← Appearance	0.137	0.038	3.648	.000
Happiness ← Attractive sites	0.044	0.029	1.536	.124
Appearance ← Crime	0.073	0.006	11.990	.000
Appearance ← Attractive sites	0.318	0.033	9.520	.000
Effects for adults aged 18–35 years				
Happiness ← Walkability	0.030	0.017	1.809	.070
Trust ← Walkability	−0.018	0.010	−1.847	.065
Health ← Walkability	0.001	0.018	0.037	.971
Appearance ← Walkability	0.038	0.018	2.056	.040
Effects for adults aged 36–45 years				
Happiness ← Walkability	0.061	0.019	3.219	.001
Trust ← Walkability	−0.015	0.010	−1.542	.123
Health ← Walkability	0.022	0.022	0.982	.326
Appearance ← Walkability	0.039	0.023	1.704	.088
Effects for adults aged 46–60 years				
Happiness ← Walkability	−0.006	0.022	−0.254	.800
Trust ← Walkability	−0.035	0.014	−2.523	.012
Health ← Walkability	0.062	0.029	2.167	.030
Appearance ← Walkability	0.039	0.024	1.635	.102
Effects for adults aged 60+ years				
Happiness ← Walkability	−0.027	0.014	−1.896	.058
Trust ← Walkability	−0.013	0.011	−1.217	.223
Health ← Walkability	0.067	0.020	3.403	.001
Appearance ← Walkability	0.056	0.029	1.911	.056

Note: Arrows (←) indicate that the variable at the tail of the arrow, in each case, influences the variable at the top of arrow. See Figure 1 for corresponding path model showing all arrows in the model.

Additional Effects on Happiness

We observed a number of other significant effects on happiness that were common across all four age groups (see Table 4). Similar to previous studies (e.g., see Hogan et al., 2016; Layard, 2005; Leyden et al., 2011), being married was associated with higher levels of happiness, and being unemployed was associated with lower levels of happiness. Likewise, higher self-reported health was associated with higher happiness. Feelings

of safety in relation to crime also predicted higher levels of happiness. Having less trust in others—specifically, reporting that people are out for themselves rather than being helpful—predicted lower levels of happiness. Finally, for adults across all age groups, higher levels of satisfaction with neighborhood appearance predicted higher levels of happiness.[6]

Discussion

In this study we examined the happiness of residents living in Dublin and its suburbs. We found evidence that living in a walkable neighborhood had direct and indirect effects on happiness. We controlled for individual-level factors that are known to affect happiness, including marital and employment status, trust, health, and education, as well as city-level factors, including the availability of attractive sites nearby (including green spaces), satisfaction with neighborhood appearance, and perceptions of crime. Professional and expert ratings of neighborhood walkability in our current study concurred with perceived walkability ratings provided by surveyed residents. Specifically, neighborhoods rated as more highly walkable by our focus group professionals and experts were also rated by residents as having a greater range of destinations available within walking distance. This measure of perceived walkability had good test–retest reliability, suggesting that city residents can provide a reliable estimate of the number of destinations within walking distance of their home.

As highlighted in Table 1, residents living in neighborhoods that were rated as highly walkable by experts/professionals reported the following perceptions: public transportation was easier to use; they owned fewer cars and spent less on gasoline; they had more routes for walking from place to place, more friendly crosswalks, and more inviting local shops; and there was a village feel to their neighborhood with lots of people out shopping or visiting restaurants and pubs nearby. Importantly, although residents' perceptions of walkability concurred with expert/professional ratings of walkability, the individual ratings of walkability and other aspects of the city environment ultimately reflected the unique experience of residents. Coupled with residents' personal circumstances (e.g., employment status, education, health, etc.), we focused specifically on the relationship between perceived walkability and happiness.

People living in walkable areas of cities are more likely to walk to more destinations, and this activity is important for maintaining health and for enhancing social connections. Consistent with the findings of this study, previous research has also found positive relationships between measures of walkability and either life satisfaction or happiness. Our research has added to

these previous findings. In addition, our findings provide further insight into the relationship between walkability and happiness in younger and older adults, which had not been fully investigated previously.

Walkability, Age, and Happiness

The direct and indirect effects of walkability on happiness differed across the four age groups we examined in the current study. Consistent with our hypothesis, we found that for adults aged 60+ years the effects of walkability on happiness were strongly mediated by health and to a lesser extent by satisfaction with neighborhood appearance, both of which had strong positive effects on happiness. In other words, neighborhood walkability had a positive effect on ratings of health and satisfaction with neighborhood appearance, and higher levels of health and satisfaction with neighborhood appearance in turn were related to higher happiness in this age group. Similarly, for adults aged 46–60 years, the effects of walkability on happiness were mediated by health and trust in others. As such, for the two older cohorts in the current study, the positive influences of living in a walkable neighborhood on health, feelings of trust in relation to others, and satisfaction with one's neighborhood were all important for understanding the relationship between walkability and happiness.

Interestingly, for younger adults aged 18–35 years, the effects of walkability were weaker, perhaps suggesting that other factors outweigh the influence of walkable neighborhoods in predicting the happiness of younger adults. Although the direct effects of walkability on happiness were positive and significant in the context of a one-tailed hypothesis (i.e., $p < .10$), the effect was not strong ($p = .07$). Furthermore, there was no effect of walkability on health or trust among the younger adults aged 18–35 years. But higher walkability was related to higher satisfaction with neighborhood appearance in this younger group, which in turn predicted their happiness levels.

In terms of strong, direct, and unmediated effects of walkability on happiness, most noteworthy is our finding that the direct effect of walkability was highly significant for adults aged 36–45 years ($p = .001$). This may reflect a certain quality of engagement with walkable neighborhoods that occurs among adults in this age group. This could be linked, for example, to particularly salient activities with children (e.g., walking to school or going to parks) or engagement linked to recreational, fitness, and social outings with family and friends. Further qualitative research might explore the activities that best account for the strong link between walkability and happiness in this age group.

Our findings build upon the work of others who have found important connections between the built

environment and either happiness or life satisfaction (e.g., Ettema & Schekkerman, 2016; Hart et al., 2018; Kent et al., 2017; Leyden et al., 2011; Pfeiffer et al., 2020). As noted, a comprehensive understanding of the relative effects of objective and subjective built environment measures on happiness remains uncertain. At the same time, the current findings build upon a body of evidence that suggests a need for an ongoing dialogue and analysis of the effects of planning decisions on the wellbeing of residents across the life span.

Why Plan and Build Walkable Neighborhoods?

Of what relevance are these findings for planners and other professionals who shape the places we live? Our results suggest that a significant number of people are happier if they live in attractive, walkable places that enable social connections and trust in others. Many people appear to benefit from living in walkable places where residents can walk to attain their daily needs in local shops, cafes, schools, parks, and places for social, leisure, and worship activities. Though some of the linkages we found were indirect, for some age groups they were direct. We found that Dublin residents aged 36–45 were happier if they lived in a walkable neighborhood. Curiously, it is this same age group that is most frequently interested in first-time homeownership. In many municipalities in the United States and Ireland (and elsewhere), planning and engineering regulations and traditions, zoning codes, and the expectations of developers, large retail stores, and financial institutions may have the (perhaps unintentional) effect of biasing development toward car-oriented suburbs. This means that this age group is likely to find a shortage of available and affordable homes in walkable neighborhoods in cities or suburbs.

We suggest that the existing literature and our current findings point to a need for an ongoing dialogue in relation to the types of places we plan and build. What would it take to make living in a walkable neighborhood a viable option for more people? How do planners best consult with stakeholders and experts in a systematic way (Hogan et al., 2015) and in ways that support evidence-based and consensus-based planning and design work? We need to know more about planning, commercial, engineering, and cost barriers to building more walkable neighborhoods. Is there a strong demand for living in walkable neighborhoods, both urban and suburban, where children can walk to school and where residents can walk to locally owned shops and cafes? Several recent studies have suggested that some of the main obstacles to building more walkable neighborhoods include zoning restrictions, existing car-dependent infrastructure, perceptions by some private developers that public demand is insufficient, and a hesitancy among financial institutions to invest in walkable

neighborhoods, particularly in more affordable areas (Clark et al., 2010; Day et al., 2022; Klein et al., 2022; Moos et al., 2018). This said, there is a lot we still do not know about these barriers and how they might be overcome.

For the planning system to deliver more walkable neighborhoods, pedestrian needs would have to be prioritized over that of motor vehicles, and zoning codes would have to permit mixed-use pedestrian-oriented development with access to effective public transportation networks. As suggested in this research, more discussion is also needed about how to plan and build unique, human-scale places that are comfortable, permeable, accessible, and visually attractive.

Levine (2006) has previously shown how planning and commercial biases produce places that many potential homebuyers do not desire to live in. For example, using a comprehensive survey of residents of Atlanta (GA) and its suburbs, Levine found that a significant percentage of Atlantans would prefer to live in more "transit- and pedestrian-friendly zones" (or walkable neighborhoods) even if they already owned a home in a car-dependent area (p. 161). The demand for more walkable communities may be just under the surface, and the fact that there is far more discussion about walkability and transit-oriented development currently suggests change may already be occurring.

Conclusion

In this study we found that living in a walkable neighborhood had direct and indirect effects on the happiness of people living in and around Dublin. Perceived walkability was directly linked to the happiness of people aged 36–45 ($p = .001$) and, to a lesser extent, those aged 18–35 years of age ($p = .07$). For older adults, neighborhood walkability was important for happiness and was related to other aspects of older adults' lives related to happiness, including their health and trust in others. This research builds upon previous research that has suggested walkable built environments influence social capital, health, and happiness. The current findings provide additional empirical evidence that should encourage planners, engineers, politicians, developers, financial institutions, and related professions to have an open dialogue about the barriers and enablers to building new walkable neighborhoods that support social connections, better health, and an improved quality of daily life. This network of professions can also explore ways of retrofitting existing car-dependent places (Dunham-Jones & Williamson, 2008) or building new transit-oriented developments (Cervero et al., 2017). Exploring new ways of planning walkable urban and suburban village-like places may lead to happier, more connected communities that are better for the health and wellbeing of people and the planet.

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NOTES

1. The Central Statistics Office of Ireland (2004) reported a low response rate for income questions in Irish questionnaires. We found the same; only 52% of our sample reported a household income. Therefore, we used whether a person reported being unemployed in our analysis, in line with a lot of previous research.

2. The measure of happiness we used was originally developed for a 10-nation study organized by The National Academy of Sciences in the Republic of Korea and the Global Metropolitan Forum of Seoul.

3. Bias et al. (2010) found the measure was highly reliable using a pre- and post-campaign survey of 3,189 respondents in four communities and in comparison with other measures. Our measure was amended slightly here to include destinations relevant to Dublin communities.

4. The structure of the neighborhoods in this study has changed very little in the 10 years since the data were collected. One low walkable area surveyed now has a pedestrian access route to the Luas light rail system, but little has changed in the streetscapes and other measured criteria.

5. Happiness was measured on a 5-point scale, so $1.3/5 \times 100 = 26\%$. An increase of 5 points in perceived walkability equates to an increase of approximately 8% in happiness.

6. We also ran an additional structural model that controlled for the regional effects of deprivation. Deprivation had no significant effect on happiness, $F(range)$, -1.76 to 0.77, $p > .05$ for all four age-groups, and the inclusion of this control variable did not change the results reported here.

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